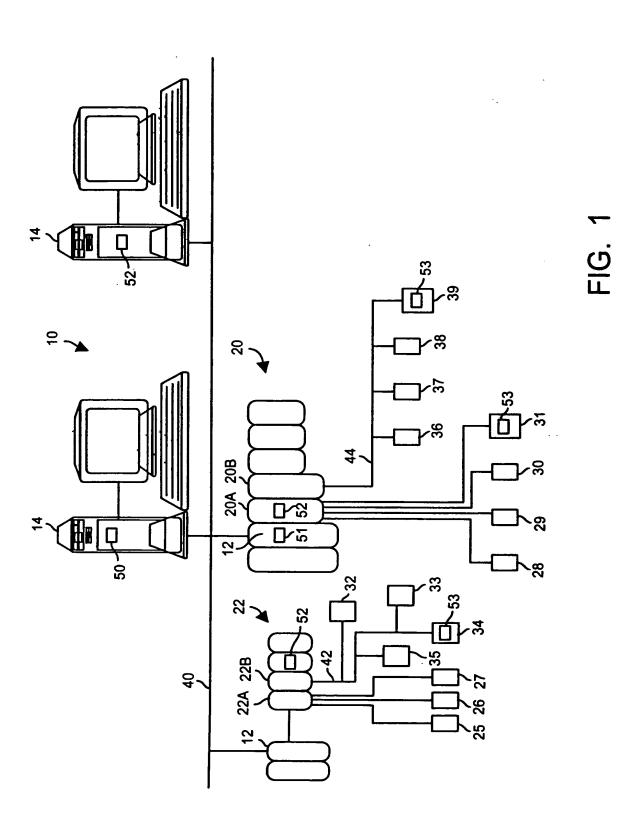


"Enhanced Device Alarms in a Process Control System"

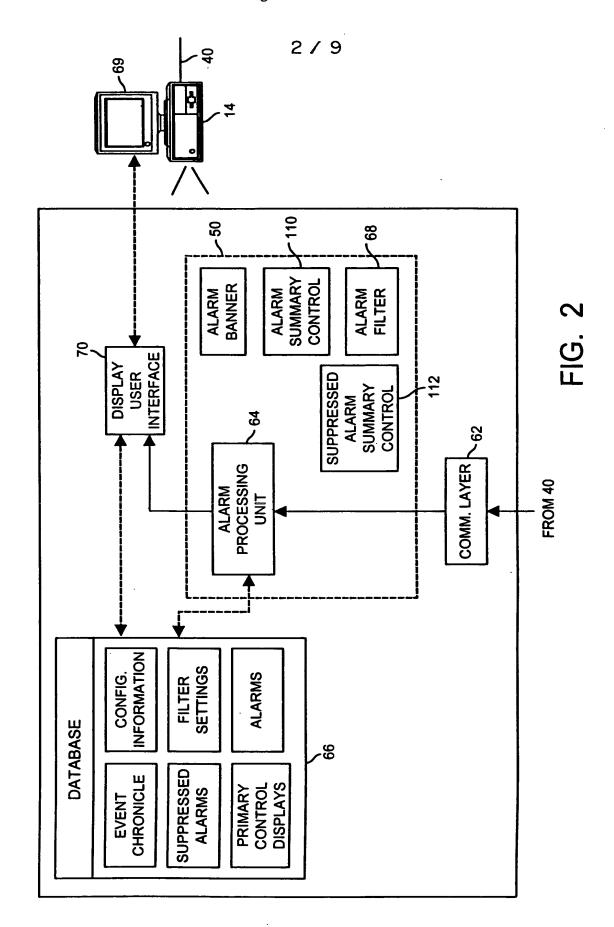
Inventor: Robert B. Havekost Docket No.: 06005/37172 Sheet 1 of 9 Fig. 1



"Enhanced Device Alarms in a Process Control System"
Inventor: Robert B. Havekost

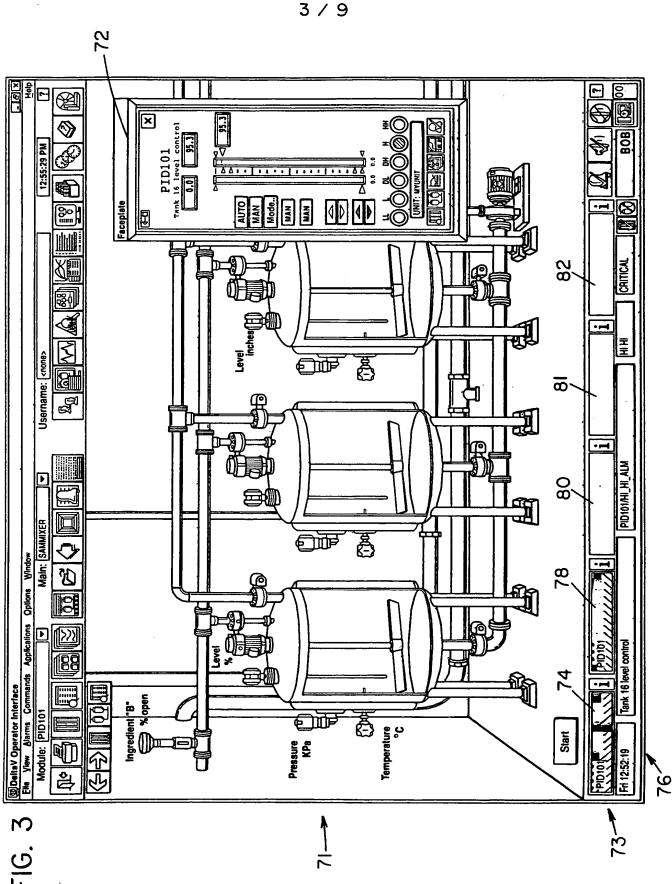
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Fig. 2



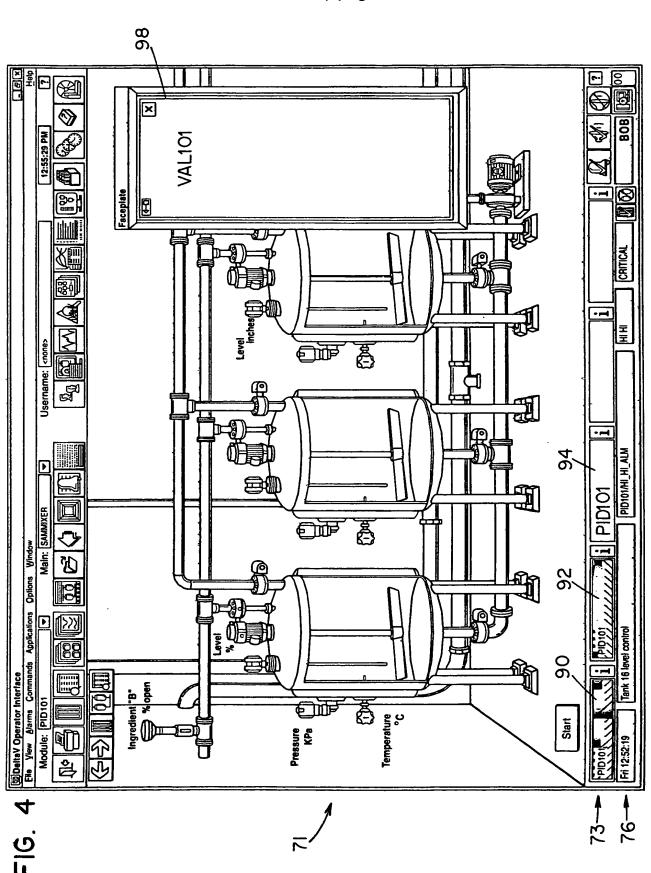
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"Enhanced Device Alarms in a Process Control System"

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Fig. 4



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Figs. 5, 6 and 7

Reactor 1 jacket heat flow FIC-101/HI_ALM HIGH WARNING	Time Unit Alarm Parameter Module Description Alarm Word Alarm Message Priority Mon 15:10:04 REACTOR1 FIC-101/HI_ALM Reactor 1 jacket heat flow HIGH High Alarm Value 1027 Limit 1000 WARNING FIG. 5	FIC-101 1	Time Unit Alarm Parameter Module Description Alarm Word Alarm Message Priority Mon 15:10:04 REACTOR1 FV-101/FAILED_ALM Reactor 1 inlet valve FAILED VP Feedback limit: 103.47 CRITICAL FIG. 6	[] FIC-101 [] [] [] [] [] [] [] [] [] [] [] [] []	Alarm Parameter Module Description Alarm Word Alarm Message CTLR 1/CARD04_FAIL Room 4, cab 3, pos 2 FAILED Channel 7 failed CRUTICAL	FIG 7
FIC-101 i Mon 15:10:04; Reactor I ja	Time Unit Alarm Mon 15:10:04 REACTOR1 FIC-10	FV-101 i FIC-101 Mon 15:10:04; Reactor I inlet valve	Time Unit Alarm Mon 15:10:04 REACTOR1 FV-10	CTLR1 i FIC-101 Mon 15:10:04; Room 4, cab 3, pos 2	Time Unit Alarm I Mon 15:10:04 CTLR1	

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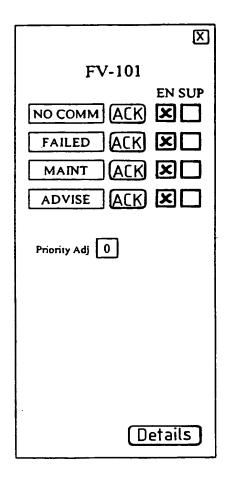


FIG. 8

X
FV-501
NO COMM ACK X ABNORMAL ACK X
Priority Adj 0
Details

FIG. 9

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X	
CTLR1	
CTLR_FAIL CARD11_COMM CARD27_FAIL CARD02_COMM	
Disable Alarms Disable Adjust 0	
Summary	

FIG. 10

Show Alarms Alarm types:	Enable	Show Priority Level >=	X
Process Hardware Device	X X	4 All alarms 8 Warning No alarms	

FIG. II

"Enhanced Device Alarms in a Process Control System"

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Figs. 12, 13 and 14

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Priority WARNING WARNING

Value = 1011,4 Limit = 1000

Alarm

Description
Tank 5 outlet flow control

Alarm Parameter FIC-501/HI ALM

Unit

Wed 12:46:30

Process:

ADVISORY

ADVISE Low variation for 60 minutes

FV-502/ADVISE ALM Tank 5 oullet flow sensor

Wed 04:08:06

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<u>~</u>		FIG.		
FIG. 12	e	Priority (WARNING CRITICAL WARNING WARNING WARNING WARNING WARNING	ADVISORY ADVISORY
→ (0 (0 (0 > > > (WARNING WARNING CRITICAL WARNING WARNING WARNING WARNING WARNING MARNING ADVISORY	ADVISORY ADVISORY T	000	
WARNING CRITICAL WARNING WARNING WARNING ADVISORY ADVISORY	init = 1000 103.7 = 78 nit = 1000 nit = 1000 = 78	= 78 O minutes Message	Value = 1011.4 Limit = 1000 IP Feedback IImit 103.7 Value = 81.4 Limit = 78 Value = 1011.4 Limit = 1000 Value = 1011.4 Limit = 1000 Value = 1011.4 Limit = 1000 Value = 81.4 Limit = 78	ADVISE Low variation for 60 minutes
in t = 1000 imit = 1000 imit = 1000 imit = 1000 it = 78 it = 78 it = 78	Message Value = 1011.4 Limit = 1000 I/P Feedback limit 103.7 Value = 81.4 Limit = 78 Value = 1011.4 Limit = 1000 Travel limit 35001 Value = 1011.4 Limit = 1000 Value = 1011.4 Limit = 1000	Value = 81.4 Limit = 78 Low variation for 60 minutes		value SE Low vari
Value = 10.11.4 Limit = 10.00 Value = 81.4 Limit = 78 Value = 1011.4 Limit = 1000 Travel limit 35001 Value = 1011.4 Limit = 1000 Value = 1011.4 Limit = 1000 Value = 81.4 Limit = 78 Value = 81.4 Limit = 78 Value = 81.4 Limit = 78 Low variation for 60 minutes	H	ISE E		
LED #	H		Tank 5 outlet flow control Reactor 1 jacket flow sensor Reactor 3 Level control Tank 5 outlet flow control Reactor 2 jacket flow sensor Tank 5 outlet flow control Tank 5 outlet flow control Reactor 1 Level control	Reactor 2 Level control Tank 5 quillet flow sensor
So S	Description Tank 5 outlet flow control Reactor 1 jacket flow sensor Reactor 3 Level control Tank 5 outlet flow control Reactor 2 jacket flow sensor Tank 5 outlet flow control Tank 5 outlet flow control	Reactor 2 Level control Tank 5 gutlet flow sensor	Tank 5 oull Reactor 1 jp Reactor 3 t Tank 5 oull Tank 5 oull Tank 5 oull	Reactor 4 t
Reactor 1 jacket flow sensor Reactor 3 Level control Tank 5 outlet flow control Tank 5 outlet flow control Tank 5 outlet flow control Reactor 1 Level control Reactor 2 Level control Reactor 2 Level control Tank 5 outlet flow sensor Tank 5 outlet flow sensor	H -		FIC-501/HI ALM FV-101/FAILED_ALM LIC-301/HI_HI_ALM FIC-501/HI_ALM FIC-501/HI_ALM FIC-501/HI_ALM LIC-101/HI_ALM LIC-101/HI_ALM	LIC-102/HI_HI_ALM
	Alarm Parameter FIC-501/HI_ALM FV-101/FAILED_ALM LIC-301/HI_HI_ALM FIC-501/HI_ALM FIC-501/HI_ALM FIC-501/HI_ALM FIC-501/HI_ALM	LIC-102/HI_HI_ALM LIC-102/HI_HI_ALM FV-502/ADVISE_ALM 1 / 2 Sort: B	-4	
A H A A A H H S I			Vocurred Wed 12:46:30 Wed 11:48:54 REACTOR1 Wed 10:51:18 REACTOR3 Wed 09:53:42 Wed 08:56:06 REACTOR2 Wed 07:58:30 Wed 07:58:30 Wed 06:03:18 REACTOR1	REACTOR2
	Unit REACTOR REACTOR REACTOR	REACTOR?	Vectoring 12:46:30 Wed 12:46:30 Wed 10:51:18 F Wed 09:53:42 Wed 08:56:06 F Wed 07:58:30 Wed 07:00:54 Wed 06:03:18 F	Wed 05:05:42 REA
Wed 12:46:30 Wed 11:48:54 REACTOR1 Wed 10:51:18 REACTOR3 Wed 09:53:42 Wed 09:56:06 REACTOR2 Wed 07:58:30 Wed 07:00:54 Wed 06:03:18 REACTOR1 Wed 06:03:18 AEACTOR1 Wed 06:03:18 AEACTOR1 Wed 06:03:14 AEACTOR1 Wed 06:03:14 AEACTOR1	Occurred Unit Wed 12:46:30 F Wed 11:48:54 REACTOR1 F F Wed 09:53:42 F Wed 08:56:06 REACTOR2 F F Wed 07:58:30 F Wed 07:00:54 F	wed 05:03:18 REACTORY Wed 05:05:42 REACTOR2 Wed 04:08:06 SS: 1 / 34 Device:	N N N N N N N N N N N N N N N N N N N	, Wer
wed 12:46:30 Wed 11:48:54 Wed 10:51:18 Wed 09:53:42 Wed 07:58:30 Wed 07:58:30 Wed 07:00:54 Wed 06:03:18 Wed 06:03:18	¶ × × × × × × × × × × × × × × × × × ×	we we we we we we		
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	-					 					_
Desc2	High Alarm Value 1027 Limit 1000		High Alarm Value 1014 Limit 1000		High Alarm Value 1014 Limit 1000	Desc2	I/P Feedback Limited: 103.47		I/P Feedback Limited: 103.47		I/P Feedback Limited: 99.8
Desc1	HIGH		HOIH		HIGH	Desc1	FAILED		FAILED		Ж
Level	11-WARNING		11-WARNING		11-WARNING	Level	15-CRITICAL		15-CRITICAL		15-CRITICAL
State	ACT/UNACK		ACT/ACK		INACT/ACK	State	ACT/UNACK		ACT/ACK		INACT/ACK
Parameter	HI_ALM		HI_ALM		HI_ALM	Parameter	FAILED_ALM		FAILED_ALM		FAILED_ALM
Module	REACTOR1/FIC-101		REACTOR1/FIC-101		REACTOR1/FIC-101	Module	REACTOR1/FV-101 FAILED_ALM		REACTOR1/FV-101 FAILED_ALM		REACTOR1/FV-101 FAILED_ALM INACT/ACK
Node	CTLR1		CTLR1		CTLR1	Node	CTLR1		CTLR1		CTLR1
Area	AREA_A		AREA_A		AREA_A	Area	AREA_A		AREA_A		AREA_A
Category	PROCESS AREA_A		PROCESS AREA_A		PROCESS AREA_A	Category	DEVICE		DEVICE		DEVICE
Event Type Category	ALARM		ALARM		ALARM	Event Type	ALARM		ALARM		ALARM
Date/Time	XXXX	••	XXXX	••	XXXX	Date/Time	XXXX	••	XXXX	••	XXXX

FIG. 15